

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-70. (Canceled)

71. (Original) In a fuel conversion reactor, a shell-and-tube heat exchanger for heating a gaseous fluid prior to reaction with a fuel and for cooling a gaseous mixture produced by the reaction, said heat exchanger comprising:

(a) a first heat exchanger section comprising:

(i) a first primary shell member having primary and secondary ends and a sidewall extending between said ends and defining a first heat exchanging chamber located within the first shell member;

(ii) a first tube sheet fixedly mounted on said primary shell member in the vicinity of said primary end and sealingly closing said first heat exchanging chamber at one end of the first chamber;

(iii) a second tube sheet device which is separate from said primary shell member and is located in the vicinity of said secondary end, said second tube sheet device forming another end of said first chamber that is opposite said one end of the first chamber; and

(iv) a plurality of heat exchange tubes extending from said first tube sheet to said second tube sheet device and rigidly connected to both the first tube sheet and the second tube sheet device, said heat exchange tubes providing passageways for said gaseous mixture to flow inside the tubes through said first heat exchanging chamber; and

(v) one or more outlet apertures formed in the region of said secondary end of said primary shell member in order to provide at least one outlet for said gaseous fluid which flows through said first heat exchanging chamber on a shell-side thereof during operation of said fuel conversion reactor; and

(b) a second heat exchanger section comprising:

(i) a second primary shell member having primary and secondary ends and a sidewall extending between said ends and defining a second heat exchanging chamber in communication with the first heat exchanging chamber, the second shell member being concentric with the first shell member with the primary end of the first shell member being located proximate the secondary end of the second shell member;

(ii) a plurality of heat exchanging tubes mounted in the second shell member and communicating with the heat exchange tubes of the first heat exchanger section;

(iii) an inlet in the sidewall of the second shell member for introducing the gaseous fluid into the second heat exchanging chamber;

(iv) one or more outlet apertures formed in the region of the secondary end of the second shell member to provide at least one outlet for the gaseous fluid to flow from the second heat exchanging chamber to the first heat exchanging chamber.

72. (Original) A fuel conversion reactor according to claim 71, wherein the first heat exchanger section further comprises one or more inlet apertures formed in the region of the primary end of the first shell member to provide at least one inlet for the gaseous fluid to flow into the first heat exchanging chamber from the second heat exchanging chamber.

73. (Original) A fuel conversion reactor according to claim 72, further comprising an outer shell section having first and second ends surrounding the secondary end of the second shell member and the primary end of the first shell member and forming a passageway for flow of the gaseous fluid from the second heat exchanging chamber to the first heat exchanging chamber, the first and second ends of the outer shell section being rigidly attached to the respective sidewalls of the first and second shell members, said passageway being formed between the outer shell section and the shell members.

74. (Original) A fuel conversion reactor according to claim 73, wherein the one or more outlet apertures formed in the region of the secondary end of the second shell member are formed between the first and second shell members.

75. (Original) A fuel conversion reactor according to claim 74, wherein the one or more outlet apertures formed in the region of the secondary end of the second shell member comprises a disconnected joint between the first and second shell members.

76. (Original) A fuel conversion reactor according to claim 72, wherein the primary end of the first shell member is of a greater diameter than the secondary end of the second shell member and wherein the secondary end of the second shell member is received inside the primary end of the first shell member, and wherein the primary end of the first shell member is rigidly attached to the sidewall of the second shell member such that a passageway for flow of the gaseous fluid from the second to the first heat exchanging chamber is formed between the first and second shell members.

77. (Original) A fuel conversion reactor according to claim 76, wherein the one or more inlet apertures comprise a continuous annular gap between the first and second shell members.

78. (Original) A fuel conversion reactor according to claim 76, wherein the one or more inlet apertures comprises a disconnected joint formed in the sidewall of the first shell member proximate its primary end.